

REMARKS

Reconsideration of the application is respectfully requested for the following reasons:

1. Amendments to Claims

Claim 1 has been reworded so that the preamble limitations of:

- irradiating the luminescent element, and
- detecting the resulting luminescence radiation spectrum (to determine whether an authenticity feature is present by checking whether a measuring vector formed from different frequencies and/or frequency domains is present in an object allocation area allocated to a reference vector that corresponds to an authenticity feature)

are now positively recited in the body of the claim. Since the amendments simply involve rearranging claim elements, it is respectfully submitted that they do not involve “new matter.”

The only other changes to the claims are amendment of claims 6, 7, and 11 to delete “exemplified by” clauses, removal of the examples from claims 7 and 11 to new claims 16 and 17, and minor formal changes to claim 15.

2. Rejection of Claims 1-14 Under 35 USC §101

This rejection has been addressed by amending claim 1 to positively recite irradiation of a document and detection of the resulting luminescence. It is respectfully noted that irradiation of the document transforms the document by causing it to become a radiation emitter, thereby satisfying the “transformation” prong of the *Bilski* test.

Withdrawal of the rejection of claims 1-14 under 35 USC §101 is accordingly respectfully requested.

3. Rejection of Claims 6, 7, and 11 Under 35 USC §112, 2nd Paragraph

This rejection has been addressed by deleting the objected-to “exemplified” phraseology.

4. Objection to Claim 8 Under 37 CFR 1.75(c)

This objection is respectfully traversed on the grounds that multiple dependencies were all removed by the preliminary amendment submitted with filing of the application. Since the objected-to “exemplified” language was added by the same preliminary amendment that deleted the multiple dependencies, which means that the preliminary amendment was properly entered, it is not understood why the Examiner believes that claim 8 is of improper form.

5. Rejection of Claims 1-11 and 15 Under 35 USC §102(b) in view of U.S. Patent No. 5,678,677 (Baudat)

This rejection is respectfully traversed on the grounds that the Baudat patent fails to disclose or suggest a method of determining whether an authenticity feature is present in a value document by:

- detecting a **luminescence radiation** spectrum emanating from the document (*i.e.*, the claimed “different frequencies and/or frequency domains of the luminance radiation”);
- forming a measuring vector from the spectrum; and
- checking whether the measuring vector is located in an “allocation area” corresponding to a given reference vector (the reference vector corresponding to an authenticity feature).

In contrast, Baudat teaches a system for recognizing the denomination of bank notes based on classification of n-dimensional measuring vectors whose components are determined by scanning the surface of the object, *i.e.*, based a **reflectivity** of the object’s surface. The measuring values are preselected component-wise in order to exclude forgery in a preprocessing step (performed by the “preliminary processing system” described in col. 4, lines 43-65 of the Baudat patent), and the remaining vectors are then, in a subsequent classification step, allocated to **pattern classes** i defined by target vectors W_i , which represent possible **denominations** of the bank note. Allocation of the vectors to the class is carried out by using a minimum distance classifier, as described in col. 6, lines 32-50, since the measuring vector X is assigned to the class i whose target vector W_i has the minimal distance to the measuring vector X according to a predetermined metric.

As a result, there are at least two substantial differences between the claimed invention and the method suggested by Baudat:

- a. The claimed invention irradiates a document and then measures spectral components of the resulting “**luminance radiation**,” which is not the same as Baudat’s **scanning** of a document. Luminescence radiation is emanated if a physical system passes from an excited state (caused by the initial irradiation) into a low-energy state, the radiation essentially representing the energy difference between the two states. The resulting luminescence radiation therefore generally has a spectrum that is not the same as the excitation radiation. For example, the excitation radiation may be visible light, while the emitted radiation may be infrared or ultraviolet light. Baudat, on the other hand, shines visible light on the document, and then measures and evaluates the reflected visible light.
- b. The claimed invention checks whether the measuring vector is in a particular “object location area,” whereas Baudat simply assigns measuring values to the closest class. In the claimed invention, the measuring vector may or may not be in a particular object location area, depending on whether an authentication feature is present in the document, and therefore the claimed invention checks whether or not the measuring vector is in the area. The claimed invention thus does not merely compare the measuring vectors with reference vectors, unlike Baudat which merely compares measuring values and classes to find the closest class, but rather performs the further steps of generating allocation areas corresponding to the reference vectors and checking whether the measuring vectors are within the allocation areas. In contrast, the Baudat does no such checking of allocation areas to determine whether an authentication feature is present. Instead, Baudat automatically assigns a measuring value to the closest pattern class. Because every note has a denomination, Baudat assumes that whatever class the measuring values are closest to is in fact the class to which the measuring values belong (once the note has been determined to be authentic in a preprocessing step). Baudat does consider the possibility that the measuring vector might not be in any class, since this possibility is addressed in an entirely separate preprocessing step that does not determine denomination or any other

feature of the scanned note, but rather merely determines whether processing should continue.

In the Official Action, the Examiner states that the allocation recited in claim 1 corresponds to the allocation described in col. 4 of Baudat. However, the allocation described in col. 4 of Baudat is, as noted above, part of a **preprocessing step** that is entirely separate from the class assignment step used to determine denomination. The preprocessing step is used solely to determine if the processing should continue, and does not result in any identification of an authentication feature, much less a classification depending on luminescent spectra or allocation of measuring *vectors* based on the spectra to areas that correspond to reference values. In Baudat, if the measuring values are outside different areas, then the document is a forgery, and further processing is ended. Unlike the claimed allocation areas, the relevant areas of Baudat do not correspond to reference vectors and do not identify any particular features. Instead, if the measuring values are inside any area, then the method of Baudat proceeds to find the closes pattern class. At no time does Baudat check whether the measuring values are in *one* of a plurality of areas in order to determine the presence of a feature corresponding to the area.

Essentially, the area checking step of Baudat is a threshold determination as to whether the denomination determination should proceed. A determination that the measuring values are *outside* the areas signifies a forgery and a determination that the measuring values are *inside* the areas signifies that only that the document is not a forgery and that further processing may be carried out to determine denomination. Thus, the preprocessing step of checking whether measuring values are located outside of areas does not correspond to the claimed step of determining whether an authentication feature is present based on the area in which a measuring vector is located.

In summary, the Baudat patent does not disclose or suggest the claimed irradiation and detection of luminescence radiation spectra, much less the identification of authentication features based on whether a measuring vector is present in an allocation area, the allocation

corresponding to a reference vector identified with a particular authentication feature. To the contrary, Baudat does not involve a *spectral* analysis, and cannot be used for such an analysis, not only because Baudat's scanning does not generate a spectrum, but also because the pattern matching method of Baudat, in which measurement values are assigned to a closest class, is not suitable for such a spectral analysis. As a result, withdrawal of the rejection of claims 1-11 and 15 under 35 USC §102(b) is respectfully requested.

6. Rejection of Claims 12-14 Under 35 USC §103(a) in view of U.S. Patent Nos. 5,678,677 (Baudat) and 7,330,606 (Yakhini)

This rejection is respectfully traversed on the grounds that the Yakhini patent, like the Baudat patent, fails to disclose or suggest a method of determining whether an authenticity feature is present in a value document by detecting a **luminescence radiation** spectrum emanating from the document; forming a measuring vector from the spectrum; and checking whether the measuring vector is located in an "allocation area" corresponding to a given reference vector (the reference vector corresponding to an authenticity feature), as recited in claim 1, from which claims 12-14 depend. Instead, Yakhini is directed to a method for evaluating the orientation of a molecular array obtained by scanning the molecular array to determine data signals emanating from discrete positions on a surface of the array. As a result, it is respectfully submitted that the Yakhini patent does not suggest either the claimed *luminescence* spectrum or the claimed determination of the presence of authentication features (or any other features) by determining whether measuring vectors based on the spectrum are present in a particular area allocated to a reference vector, as claimed.

Consequently, it is respectfully submitted that the Baudat and Yakhini patents, whether considered individually or in any reasonable combination, fail to disclose or suggest the claimed invention, and withdrawal of the rejection of claims 12-14 under 35 USC §103(a) is respectfully requested.

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Having thus overcome each of the rejections made in the Official Action, withdrawal of the rejections and expedited passage of the application to issue is requested.

Respectfully submitted,

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